ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

RELEASED ITEM BOOKLET

GRADE 5

AUGMENTED BENCHMARK EXAMINATION

April 2013

Arkansas Department of Education

Acknowledgments

Table of Contents—2013 Augmented Benchmark Grade 5

The criterion-referenced tests implemented as part of the Arkansas Comprehensive Testing, Assessment, and Accountability Program (ACTAAP) are being developed in response to Arkansas Legislative Act 35, which requires the State Board of Education to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks.

As part of this program, all grade 5 students in Arkansas public schools participated in the *Grade 5 Augmented Benchmark Examination* in April 2013.

This Released Item Booklet for the *Grade 5 Augmented Benchmark Examination* contains test questions or items that were asked of students during the April 2013 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given between two and three hours each day to complete assigned test sessions during the five days of testing in April 2013. Students were permitted to use a calculator for the mathematics items (both multiple-choice and open-response), with the exception of mathematics questions 1–5 in this Released Item Booklet (items 1–10 in the test booklet). Students were also supplied with a reference sheet to be used during the mathematics sessions so that all students would have equal access to this information during testing. (See the reference sheet on page 32 of this booklet.) All of the reading, writing, mathematics, and science multiple-choice items within this booklet have the correct response marked with an asterisk (*****). The open-response questions for reading, mathematics, science, and the essay prompt for writing are listed with scoring guides (rubrics) immediately following. These rubrics provide information on the scoring model used for each subject, with the scoring model for writing defining the overall curricular and instructional link for that subject with the *Arkansas English Language Arts Curriculum Framework*. The domain scoring model, implemented within Arkansas for a number of years, illustrates the appropriate instructional approaches for writing within the state.

The development of the *Grade 5 Augmented Benchmark Examination* was based on the Arkansas Curriculum Frameworks. These frameworks have common distinct levels: Strands to be taught in concert, Content Standards within each Strand, and Student Learning Expectations within each Content Standard. Abridged versions of the *Arkansas English Language Arts Curriculum Framework—Reading Strand, Arkansas English Language Arts Curriculum Framework—Writing Strand, Arkansas Mathematics Curriculum Framework,* and *Arkansas Science Curriculum Framework* can be found in Part III of this booklet. It is important to note that these abridged versions list only the predominant Strand, Content Standard, and Student Learning Expectation associated with each item. However, since many key concepts within the Arkansas Curriculum Frameworks are interrelated, in many cases there are other item correlations or associations across Strands, Content Standards, and Student Learning Expectations.

Part III of the Released Item Booklet also contains a tabular listing of the Strand, Content Standard, and Student Learning Expectation that each question was designed to assess. The multiple-choice and open-response items found on the *Grade 5 Augmented Benchmark Examination* were developed in close association with the Arkansas education community. Arkansas teachers participated as members of Content Advisory Committees for each subject area, providing routine feedback and recommendations for all items. The number of items associated with specific Strands, Content Standards, and Student Learning Expectations was based on approximate proportions suggested by the Content Advisory Committee, and their recommendations were accommodated to the greatest extent possible given the overall test design. Part III of the Released Item Booklet provides Arkansas educators with specific information on how the *Grade 5 Augmented Benchmark Examination* items align or correlate with the Arkansas Curriculum Frameworks to provide models for classroom instruction.

PART I   Scoring Student Responses to Open-Response Items

While multiple-choice items are scored by machine to determine if the student chose the correct answer from four options, responses to open-response items must be scored by trained "readers" using a pre-established set of scoring criteria.

The Arkansas Benchmark Rangefinding Committee assisted in the development of the scoring criteria. The committee comprises active Arkansas educators with expertise in science, math, English, and/or language arts education.

Reader Training

Readers are trained to score only one content area. Qualified readers for Arkansas scoring will be those with a four-year college degree in science, math, English, language arts, education, or related fields.

Before readers are allowed to begin assigning scores to any student responses, they go through intensive training. The first step in that training is for the readers to read the writing prompt, the science open-response item, the math open-response item, or the reading passage and its open-response item as it appeared in the test booklet and to respond—just as the student test takers are required to do. This step gives the readers some insight into how the students might have responded. The next step is the readers' introduction to the scoring rubric. All of the specific requirements of the rubric are explained by the Scoring Director who has been specifically trained to lead the scoring group. Then, responses (anchor papers) that illustrate the score points of the rubric are presented to the readers and discussed. The goal of this discussion is for the readers to understand why a particular response (or type of response) receives a particular score. After discussion of the rubric and anchor papers, readers practice scoring sets of responses that have been pre-scored and selected for use as training papers. Detailed discussion of the responses and the scores they receive follows.

After three or four of these practice sets, readers are given "qualifying rounds." These are additional sets of pre-scored papers, and, in order to qualify, each reader scoring responses must score in exact agreement on at least 80% of the responses, and each reader scoring writing responses must score in exact agreement with 70% of the responses in each domain. Readers who do not score within the required rate of agreement are not allowed to score the *Grade 5 Augmented Benchmark Examination* responses.

Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and the Scoring Director or Team Leaders reread selected responses scored by the readers. These procedures promote reliable and consistent scoring. Any reader who does not maintain an acceptable level of agreement is dismissed from the project.

Scoring Procedures

All student responses to the *Grade 5 Augmented Benchmark Examination* open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a "1" and a "3," for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

1 Below is a diagram of a plant cell with numbers pointing to four different structures.
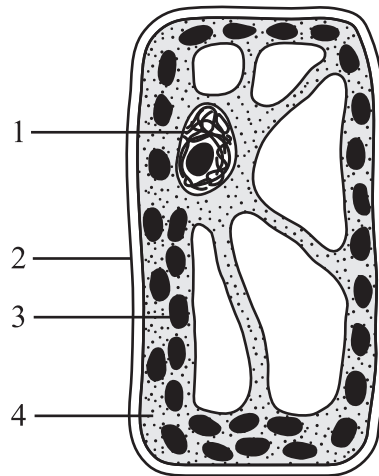
Which list shows the numbers with the correct cell structures?

A (1) nucleus, (2) cell membrane, (3) cell wall, (4) cytoplasm

B (1) chloroplast, (2) nucleus, (3) cell membrane, (4) cell wall

C (1) chloroplast, (2) cytoplasm, (3) cell membrane, (4) nucleus

* **D** (1) nucleus, (2) cell wall, (3) chloroplast, (4) cytoplasm

2 Which serve as evidence for a scientific theory?

A guesses

B opinions

C arguments

* **D** observations

3 The table below shows possible types of relationships among organisms.

Relationships among Organisms

Type of Relationship	Effect on Organism 1	Effect on Organism 2
1	helped	helped
2	harmed	unaffected
3	helped	unaffected
4	unaffected	harmed

Which type of relationship describes mutualism?

* **A** 1

B 2

C 3

D 4

4 An organism eats grass and is preyed upon by a carnivore.

Which categories describe this organism?

  A producer and consumer

* **B** consumer and herbivore

  C decomposer and producer

  D herbivore and decomposer

5 Sam looks into a fish pond and points at a goldfish. Sam's grandfather looks where Sam is pointing and tells Sam that the fish is actually in a different location.

Which property of light explains why Sam's grandfather is correct?

  A reflection

* **B** refraction

  C diffraction

  D absorption

6 In the rock cycle, what happens when magma cools?

* **A** Igneous rock forms.

  B Crystal becomes lava.

  C Metamorphic rock becomes magma.

  D Sedimentary rock becomes metamorphic rock.

7 Sam builds a ramp and lets a toy car roll down. Which describes the energy of the car as it rolls down the ramp?

  A The kinetic energy and the potential energy both increase.

  B The kinetic energy and the potential energy both decrease.

* **C** The kinetic energy increases and the potential energy decreases.

  D The kinetic energy decreases and the potential energy increases.

8 Which is **not** used in photosynthesis?

  A water

* **B** nitrogen

  C sunlight

  D carbon dioxide

9 The picture below shows a tool being used to split wood.

Which types of simple machines **best** describe the sharp edge and the handle of this tool?

* **A** wedge and lever
  B pulley and screw
  C screw and inclined plane
  D inclined plane and wedge

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10 Which mineral has six-sided transparent crystals that will scratch glass?

  A sulfur
* **B** quartz
  C calcite
  D feldspar

11 As part of an experiment, an astronaut takes a scale to the Moon and weighs himself. The scale reads 31 pounds. If the astronaut has a mass of about 84 kilograms, which are the approximate weight and mass of the astronaut when standing on the Earth?

  A 31 pounds and 14 kilograms
  B 31 pounds and 84 kilograms
  C 186 pounds and 14 kilograms
* **D** 186 pounds and 84 kilograms

12   The diagram below compares and contrasts the Bald Eagle and the American Robin.

Bald Eagle   **American Robin**

Sharp talons   Perching feet

Square tail

Carnivorous   Omnivorous

Hollow bones

Curved beak   Straight beak
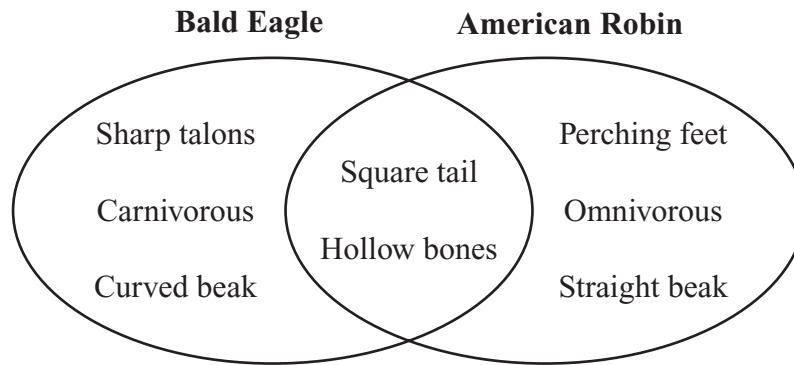
According to the Venn diagram, which feature does a Bald Eagle and an American Robin have in common?

* **A**   square tail
  B   sharp talons
  C   curved beak
  D   perching feet

13   Which is the correct order of the planets from the Sun?

  A   Mercury, Venus, Earth, Saturn, Uranus, Jupiter, Mars, Neptune
  B   Mercury, Earth, Mars, Venus, Saturn, Jupiter, Neptune, Uranus
  C   Mercury, Venus, Mars, Earth, Jupiter, Uranus, Saturn, Neptune
* **D**   Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

14 Mr. Pratt does a science demonstration. He inflates a balloon, places it in a freezer, and then removes it after 10 minutes.

Which **best** describes the balloon's volume when in the freezer and then after being removed and allowed to warm up?

  A expands in the freezer and then contracts as it gets warmer again

* **B** contracts in the freezer and then expands as it gets warmer again

  C expands in the freezer and then keeps that volume when warmed up

  D contracts in the freezer and then keeps that volume when warmed up

15 Compared to other stars in our galaxy, which is the **best** description of our Sun?

  A larger size, higher temperature

  B smaller size, higher temperature

  C larger size, average temperature

* **D** average size, average temperature

16 Which is a true statement about cells?

* **A** Plant cells contain chloroplasts.

  B Animal cells are missing a nucleus.

  C Only plant cells have a cell membrane.

  D Animal cells include a rigid wall structure.

17 Which is an example of a physical change?

* **A** breaking an object into smaller pieces by using a hammer

  B allowing an iron chain to remain in salt water until it rusts

  C heating a brown substance until it changes into a gray powder

  D reacting vinegar and baking soda to make white foam and a gas

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Science Item A—2013 Grade 5

A Fishhook cactus grows in the deserts of North America. Mr. Drexler conducts an investigation with his class to discover how well fishhook cactus grows in different conditions. Some young fishhook cactus plants are put into one of four groups and grown as described below.

- Group I is planted in potting soil and is given 20 ml of water every day.

- Group II is planted in potting soil and is given 20 ml of water once each week.

- Group III is planted in potting soil with lots of sand and crushed rock and is given 20 ml of water every day.

- Group IV is planted in potting soil with lots of sand and crushed rock and is given 20 ml of water once each week.

All four groups are given the same amount of sunlight. After two months, the plants in Group IV appear to be the healthiest of all the groups. Plants in Group I appear to be very unhealthy.

1. What should students in Mr. Drexler's class conclude about the type of soil that is best for fishhook cactus?

2. What should students in Mr. Drexler's class conclude about the amount of water that is best for fishhook cactus?

3. Some students want to conduct another investigation with fishhook cactus. In addition to observing the plant to see if it looks healthy, they want to take measurements and collect some data. Identify two variables that could be measured to help determine if a plant is healthy.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Science Item A Scoring Rubric—2013 Grade 5

Score	Description
4	Response shows a complete understanding of investigations in which plants are encouraged to thrive. The student presents correct descriptions to all parts of the task.
3	Response shows a nearly complete understanding of investigations in which plants are encouraged to thrive. The student presents nearly all descriptions to all parts of the task. The response may contain minor errors.
2	Response shows a limited understanding of investigations in which plants are encouraged to thrive. The student presents some descriptions correctly to most parts of the task. The response may contain a major error.
1	Response shows a minimal understanding of investigations in which plants are encouraged to thrive. The student presents some descriptions. The response contains incomplete descriptions and major errors.
0	Response shows insufficient understanding of investigations in which plants are encouraged to thrive. The descriptions, if any, contain major errors. There may be no descriptions, or the reader may not be able to understand the explanation. The reader may not be able to understand how and why decisions were made.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible:** Correct conclusion.
2	**1 point possible:** Correct conclusion.
3	**2 points possible:** One point for each variable.

Science Item B—2013 Grade 5

B   Jean wants to show the difference between transparent and opaque objects.

1. List an example of a material that is transparent. Describe how Jean could demonstrate that the material is transparent.

2. List an example of a material that is opaque. Describe how Jean could demonstrate that the material is opaque.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Science Item B Scoring Rubric—2013 Grade 5

Score	Description
4	Response shows a complete understanding of transparent and opaque as applied to light. The student presents correct descriptions to all parts of the task.
3	Response shows a nearly complete understanding of transparent and opaque as applied to light. The student presents nearly all descriptions to all parts of the task. The response may contain minor errors.
2	Response shows a limited understanding of transparent and opaque as applied to light. The student presents some descriptions correctly to most parts of the task. The response may contain a major error.
1	Response shows a minimal understanding of transparent and opaque as applied to light. The student presents some descriptions. The response contains incomplete descriptions and major errors.
0	Response shows insufficient understanding of transparent and opaque as applied to light. The descriptions, if any, contain major errors. There may be no descriptions, or the reader may not be able to understand the explanation. The reader may not be able to understand how and why decisions were made.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible:** 1 point for listing a transparent material. 1 point for describing a valid demonstration.
2	**2 points possible:** 1 point for listing an opaque material. 1 point for describing a valid demonstration.

CALCULATOR NOT PERMITTED—ITEMS 1–5

1 Daphne asked 9 students how many brothers and sisters they have. The line plot below shows the results.

```
        X
        X   X   X
X   X   X   X           X
|---|---|---|---|---|---|---|--->
0   1   2   3   4   5   6
```
Brothers and Sisters
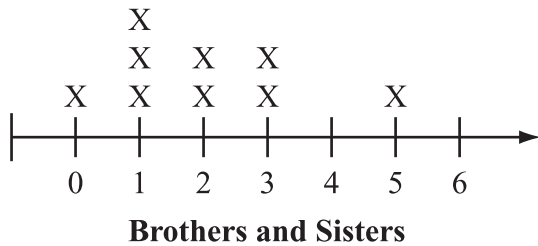
What is the mean number of brothers and sisters in the data set?

  A 1
* **B** 2
  C 3
  D 5

2 William bought a quartz crystal at a gem shop.

What is the length, to the nearest $\frac{1}{4}$-inch, of the crystal?

  A 3 inches
* **B** $3\frac{1}{4}$ inches
  C $7\frac{1}{2}$ inches
  D 8 inches

12

3 Nathan is writing a survey question to send to all the residents of his neighborhood. The purpose of the survey is to determine whether residents want a playground built at Smith Field. Which question would help Nathan get the most accurate results?

* **A** Should we build a playground in Smith Field?

B Why should we build a playground in Smith Field?

C When should we start building the playground at Smith Field?

D Is the expense of maintaining a playground at Smith Field worth it?

4 Corey recorded the outside temperature every 3 hours starting at 7 A.M. one day.

Outside Temperatures

Time of Day	Temperature (°F)
7 A.M.	60
10 A.M.	65
1 P.M.	67
4 P.M.	65
7 P.M.	62

Which statement describes how the temperature changed as time passed during the day?

A The temperature decreased as time passed.

B The temperature decreased then increased as time passed.

C The temperature increased as time passed.

* **D** The temperature increased then decreased as time passed.

5 Ari has $11.56 in his pocket. How much money does Ari have, rounded to the nearest tenth?

A $10.00

B $11.50

* **C** $11.60

D $12.00

CALCULATOR PERMITTED—ITEMS 6–20 and A–C

6   Mr. Phelps is planning to build a fence in his backyard. Which is the best unit for Mr. Phelps to use to measure the height of the fence?

* **A**   meter
  B   minute
  C   kilogram
  D   kilometer

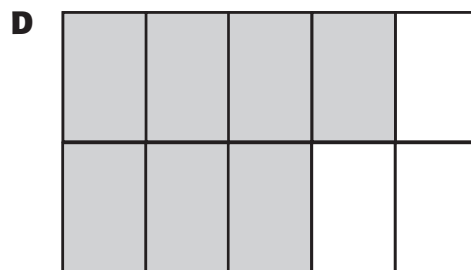**7**   Hogan wrote the expression below.
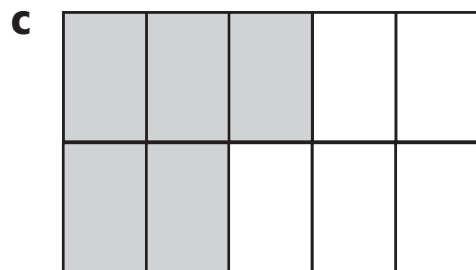
$$h \times 4$$

What is the value of Hogan's expression, when $h = 8$?

  A   2
  B   4
  C   12
* **D**   32

8 Brad, Mike, Paul, and Jamal shared a tuna casserole for lunch. Brad ate 0.35 of the tuna casserole. Mike ate 0.15 of the tuna casserole. Paul ate 0.20 of the tuna casserole.

Which model represents the amount of the tuna casserole Jamal ate?

A

*B

C

D
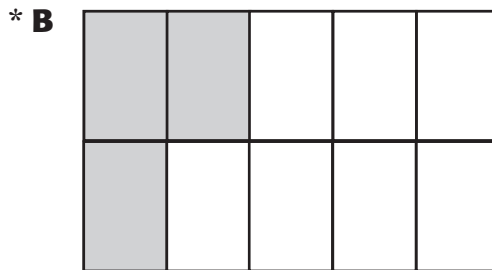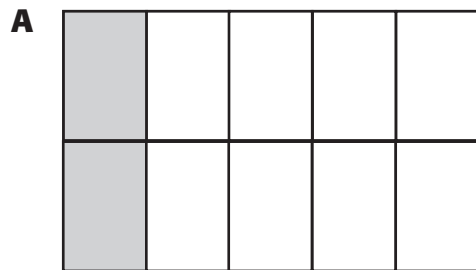
9 Caleb tells his sister that it will take 180 minutes to get from home to Grandma's house. How many hours will it take?

* **A**   3
  B   4
  C 12
  D 18

15

10 Mariano has a gift certificate for $15 at a local restaurant. Which of the following expressions can Mariano use to determine the cost of a meal after using the gift certificate?

   A $15 - c$

   B $c + 15$

   C $c \div 15$

  * **D** $c - 15$

11 Jan is shopping for a new dress. She found the dresses shown in the table below.

Dresses That Jan Found

Color	Number of Dresses
violet	2
white	1
green	2
red	3
pink	2

If Jan randomly chooses a dress, what is the probability that it will be pink?

   A 2 out of 8

   B 8 out of 8

  * **C** 2 out of 10

   D 8 out of 10

12 Which net **cannot** be folded to make a closed cube?

A

B

C

* **D**

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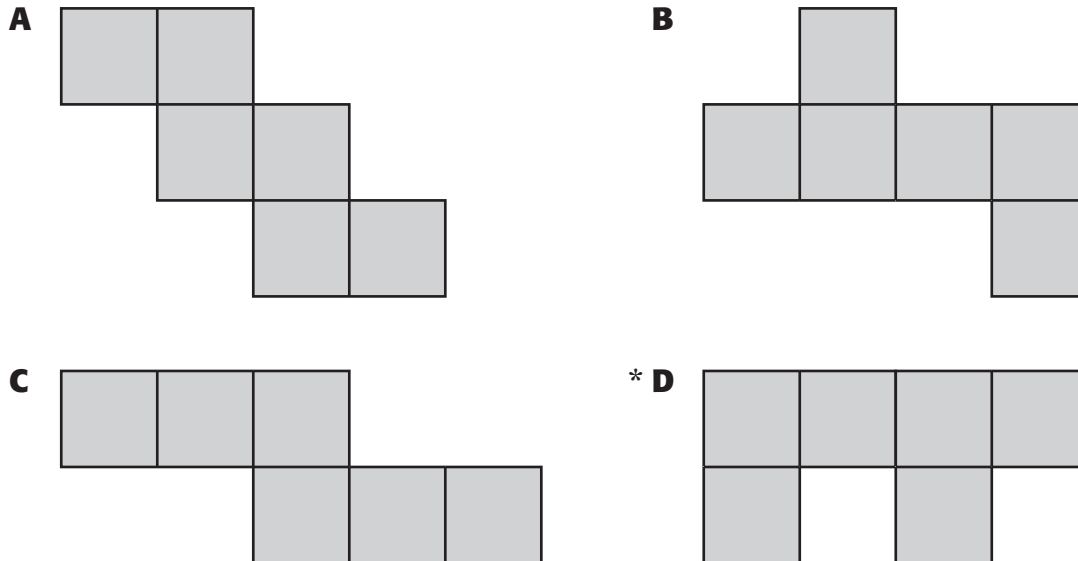
13 Mr. and Mrs. Perrine made a circle graph of their family spending.

Family Spending

Debt 14%

Savings 11%

Housing 36%

Living Expenses 25%
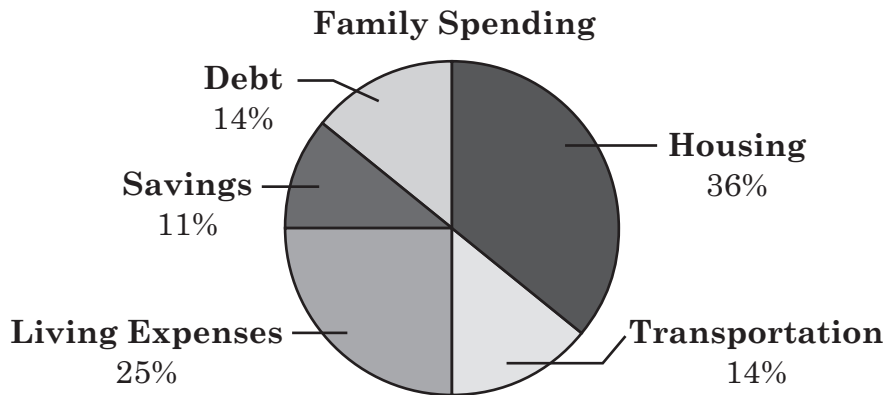
Transportation 14%

Which statement is **best** supported by the data in the graph?

* **A** Savings and debt together make up as much of the spending as living expenses.
B Housing and transportation together make up less than one-half of total spending.
C The savings and living expenses make up as much of the family spending as housing and transportation.
D If the Perrines began spending more money on living expenses, that part of the graph would increase, but the other categories would stay the same.

14   Brenda asked her classmates a question. She made a bar graph of their answers.

Results of Survey

Number of Classmates
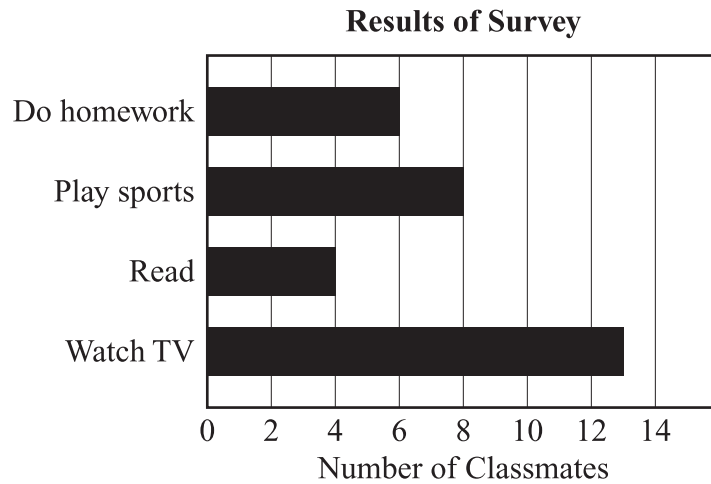
What question did Brenda **most likely** ask?

  A   Which is better, reading or sports?

  B   Where do you go after school is over?

 * **C**   What do you do after school gets out?

  D   What activity do you dislike the most?

18

15 Kwami drew the rectangle shown below.
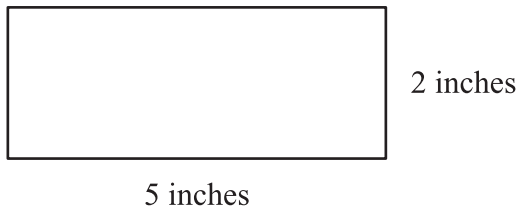
2 inches

5 inches

Kwami draws another rectangle that is congruent to the rectangle above. What must be true about Kwami's second rectangle?

  A It must have no right angles.

* **B** It must have a perimeter of 14 inches.

  C It must have an area of 14 square inches.

  D It must have sides of 3 inches and 4 inches.

16 Look at this triangle drawn on a grid.
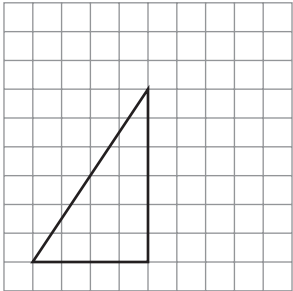
Which illustration is the result of flipping the triangle vertically?

A

B

C

* D
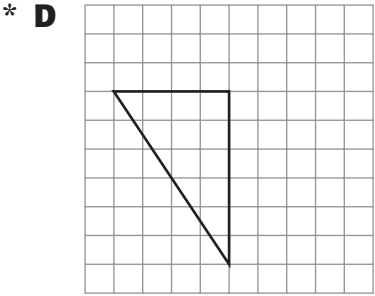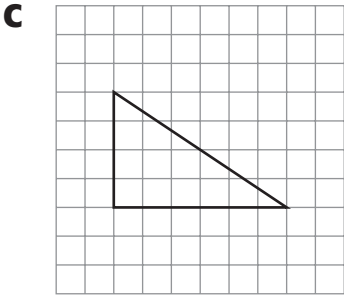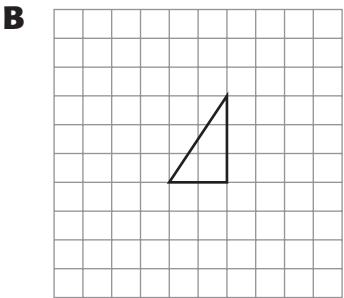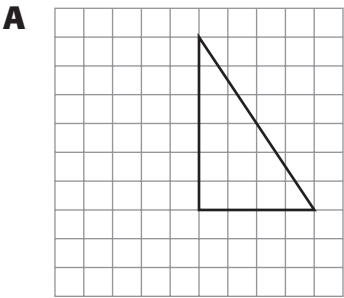
17 The clock below shows the time that
Alejandro arrived at school.
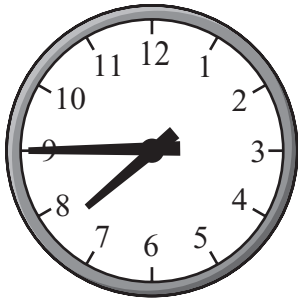
He has to leave school for a dentist
appointment in $4\frac{1}{2}$ hours. What time
should Alejandro leave school?

  A 11:15

  B 12:00

* **C** 12:15

  D 12:30

18 The graph shows data about the liquid in a hummingbird feeder.

Hummingbird Feeder
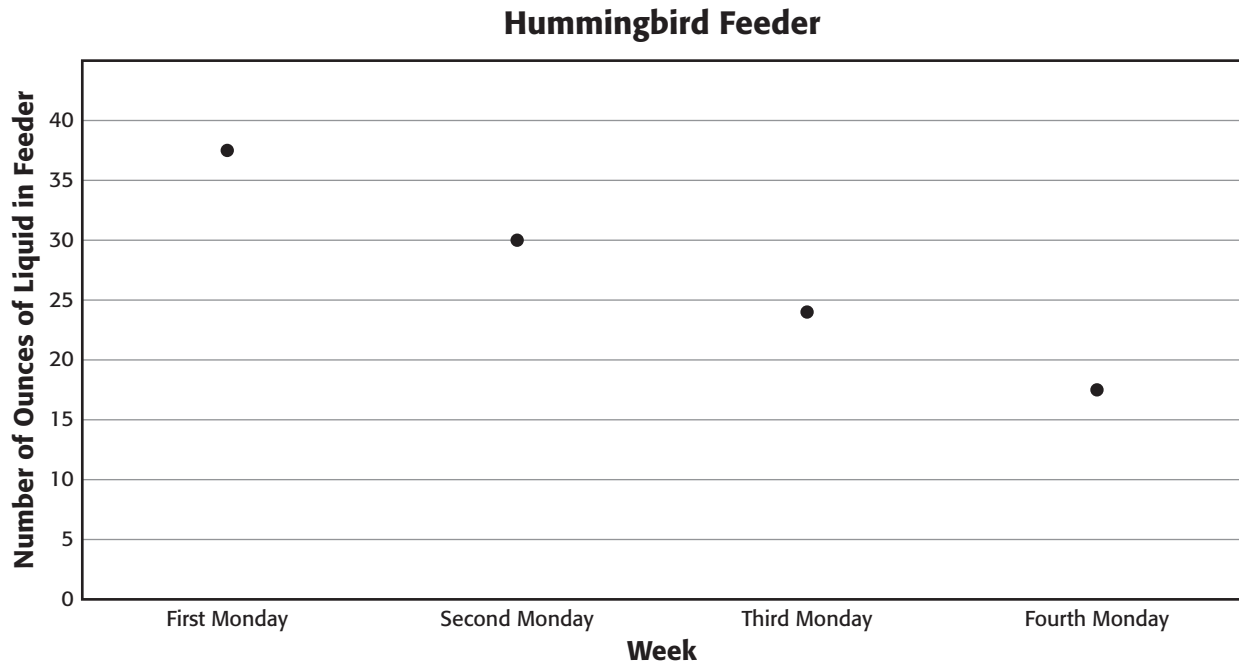
Based on the data in the graph, which statement is true?

* **A** During each week, the number of ounces of liquid in the feeder decreased.
  B During each week, the number of ounces of liquid in the feeder increased.
  C During only one week, the number of ounces of liquid in the feeder decreased.
  D During only one week, the number of ounces of liquid in the feeder increased.

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19 Vance is building a fence around part of his lawn. Which units would he use for the length of the fence and the area of lawn enclosed?

  A feet for the fence, cubic feet for the lawn
* **B** feet for the fence, square feet for the lawn
  C square feet for the fence, feet for the lawn
  D square feet for the fence, cubic feet for the lawn

20 The table below shows the relationship between the number of model cars being built and the number of wheels needed to build that many model cars.

Model Cars and Wheels

Number of Cars	Number of Wheels
1	4
2	8
3	12
4	?

How many wheels are needed for 4 cars?

A 14

B 15

* **C** 16

D 20

Mathematics Item A—2013 Grade 5

A   Emily's father bought some apples, bananas, and pears at the store. He bought 2 more apples than pears. To answer the following questions, use the variables:

a = represents the number of apples

b = represents the number of bananas

p = represents the number of pears

1. Write an expression that could be used to determine the total number of apples Emily's father bought.

2. If Emily's father bought exactly 6 pears, what is the total number of apples he bought? Show all your work and/or explain your answer.

3. Emily's father bought 3 fewer bananas than pears. Write an expression that could be used to determine the total number of bananas Emily's father bought. Use your expression to find the answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Mathematics Item A Scoring Rubric—2013 Grade 5

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	**1 point possible:** 1 point: Correct expression: P + 2 **OR** ½ point: Correct equation: P + 2 = A
2	**1½ points possible:** 1 point: Correct answer: 8 (Apples) *Or correct answer based on previous part* **AND** ½ point: Correct and complete explanation or work shown *Work may contain an arithmetic or copy error* Give credit for the following or equivalent: Ex. 6 + 2 = #
3	**1½ points possible:** 1 point: Correct expression: P - 3 **OR** ½ point: Correct equation: P - 3 = B **AND** ½ point: Correct answer: 3 (Bananas) *Or correct answer based on incorrect expression or equation*

Mathematics Item B—2013 Grade 5

B A class went on a field trip to a nature preserve. Each member of the class carried a clipboard and recorded how many times they saw a particular animal. This is the data from eight of the clipboards.

Beavers //	Canada Geese ⊬⊬ ⊬⊬ ⊬⊬ ⊬⊬
Ducks ⊬⊬ ⊬⊬ ⊬⊬	Swans ⊬⊬ ///
Blue Herons ///	Red-Tailed Hawks /
Deer ⊬⊬	Frogs ////

1. On the grid in your answer document, construct a bar graph showing the animals the class saw. Be sure to title and label your graph.

2. Compare the number of deer the class saw to the number of Canada geese they saw. Explain your answer using the graph you drew.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Mathematics Item B Scoring Rubric—2013 Grade 5

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	**3 points possible:** 3 points: Correct graph with title, labels, and proper scaling. *Graph may be vertical or horizontal* Ex. Animals seen in the Preserve **OR** 2 points: Graph contains 1 error. Graph errors: Missing title Missing or incorrect label Inconsistent intervals/scaling Missing bar 1 bar with an incorrect height **OR** 1 point: Graph contains 2–3 errors.
2	**1 point possible:** 1 point: Correctly compares the deer and the geese. Ex. There were 4 times more geese. Ex. There were 15 more geese. Ex. There were fewer deer than geese. or Answer is correct based on incorrect Part 1

Mathematics Item C—2013 Grade 5

C   Paula drew 2 congruent triangles, as shown.
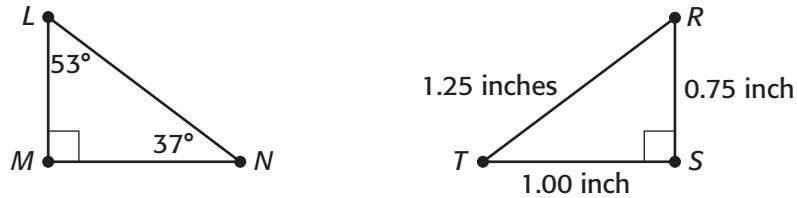
She recorded the length of some of the sides and the measure of some of the angles in the chart below.

Triangles *LMN* and *RST*

Side	Length	Angle	Measure
LM	?	LMN	90°
MN	?	MNL	37°
LN	?	NLM	53°
RS	0.75 inch	RST	?
ST	1.00 inch	STR	?
RT	1.25 inch	TRS	?

1. List and label the 3 side lengths of triangle *LMN*. Use words, numbers, and/or pictures to explain how you determined your answer.

2. List and label the 3 angle measures of triangle *RST*. Use words, numbers, and/or pictures to explain how you determined your answer.

3. Which 2 angles in the congruent triangles measure 37°?

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Mathematics Item C Scoring Rubric—2013 Grade 5

Score	Description
4	The student earns 5 points. Units are not required but at a 4 level must be correct, and the response contains no incorrect work.
3	The student earns 3 – 4 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank—No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Solution and Scoring

Part	Points
1	**2 points possible:**

2 points: Correct answers   LM = .75
and labels: MN = 1
                         LN = 1.25

Correct and complete explanation or work shown
Give credit for the following or equivalent:

Ex.   Congruent means the triangles are exactly alike; each side
length equals the corresponding side length.

The triangles are the same.

OR

1 point: Correct answers   LM = .75
and labels: MN = 1
                         LN = 1.25

Explanation is incomplete, missing, or incorrect

or

Correct explanation but the answer(s) are incorrect or the labels
are missing.

| 2 | **2 points possible:** |

2 points: Correct answers   RST = 90°
and labels: STR = 37°
                         TRS = 53°

Correct and complete explanation or work shown
Give credit for the following or equivalent:

Ex.   Congruent means the triangles are exactly alike; each
angle equals the corresponding angle measure.

The triangles are the same.

OR

1 point: Correct answers   RST = 90°
and labels: STR = 37°
                         TRS = 53°

Explanation is incomplete, missing, or incorrect

or

Correct explanation but the answer(s) are incorrect or the labels
are missing.

Part	Points
3	**1 point possible:**
	1 point: Correct answer: ∠MNL and ∠STR *Or correct answer based on previous parts*

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Mathematics Reference Sheet
Grade 5

Use the information below, as needed, to answer questions on the Mathematics test.

Square	Rectangle	Triangle
Area = $s \times s$ Perimeter = $4 \times s$	Area = $l \times w$ Perimeter = $(2 \times l) + (2 \times w)$	Perimeter = $a + b + c$

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5,280 feet

1 cup = 8 ounces (oz)

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 kilogram = 1000 grams

1 meter = 100 centimeters

1 centimeter = 10 millimeters

1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 pound (lb) = 16 ounces (oz)

QAI08568

The Dolphin Who Loved Games

by Lyle Berg

Years ago, I studied biology—the science of living things. I was fascinated by dolphins. When I had the chance to work with scientists who studied how dolphins lived, swam, and talked to one another, I took it.

One day, a dolphin named Peg was brought to our facility and placed in what we called the Big Tank. It was a round pool of filtered salt water, about 60 feet across and 5 feet deep. Six other friendly dolphins lived in the Big Tank, but Peg seemed especially friendly. Whenever I was working around the tank, she would swim along the side, staying as close to me as she could.

Peg's Toy Ball

I wondered if she would like something to play with, so I went to a store and bought a yellow ball about the size of a soccer ball. The next morning, I tossed the ball into her pool. As soon as she saw it, she shot through the water and tucked the ball under her left pectoral fin—one of the two fins that dolphins have in front.

4 From that day on, she always had the yellow ball with her, and she always tucked it under the same fin. When I walked up to the tank, she would swim over, let the ball go, and use her long snout to flip it up for me to catch.

Race to the Ball

Peg loved that game, but there was another one she liked even better. My dog liked to play a game in which I would throw a ball and we would race each other to get it. The dog was much faster and always got there first. I wanted to try this game with Peg, too.

The next time she tossed me the ball, I threw it to the far edge of the pool. Then I started to run around the edge of the pool as fast as I could.

She liked the game, but she played it differently than my dog did. Instead of going fast, she swam slowly across the pool, getting to the ball just before I did. Peg should have been able to get to her ball way ahead of me. She only had to swim across her tank and could hit speeds of up to 20 miles per hour. But I had to run all the way around the edge in my clumsy rubber boots. I wasn't nearly as fast.

I wondered, "Why didn't she swim faster? Was it more fun getting to the ball at the last second and swooshing it away just before I picked it up?"

But that wasn't all that was different. Peg didn't always get to the ball first. Once in a while, she let me get to the ball first. I wondered why. The only thing I could think of was that she didn't want me to get discouraged and stop playing with her.

Playing with Gulls

Peg made up another game all by herself.

At feeding time, Peg would often save bits of fish and use them to play with the gulls hanging around the pool.

A few gulls always sat on the edge, hoping to pick up scraps of fish. The gulls stayed on the edge because if they landed in the water, the dolphins swam under them, and tossed them into the air. (Today, gulls are kept away from dolphins in marine mammal facilities to protect the dolphins from a sick gull that might make them sick.)

13   To play her "Gull Game," Peg took a piece of fish in her teeth and, with a flick of her head, tossed it into the water, near one of the gulls. The gull would quickly lean out over the <u>edge</u> and reach down to get the food.

If the food landed too close to the gull, Peg shot over and grabbed the fish in her teeth before the gull could grab it. Then Peg backed up and tried again. If she got the distance just right, the gull would reach too far, lose its balance, and fall into the water with a *plop*. Peg always let the gull keep the fish and didn't toss the bird up in the air, but she did *chitter-chatter*. I supposed she was laughing. I know I was.

During my work at the facility, I never learned to speak "dolphin." But Peg and I had a lot of fun playing together, and the two of us seemed to communicate just fine.

1 From Peg's behavior in paragraph 4, readers can tell that

    A all dolphins love to play catch.

    B most dolphins love yellow things.

  * **C** Peg loves to play catch with the author.

    D Peg fears the other dolphins will take her toys.

2 Which detail shows that giving Peg the yellow ball was a good idea?

    A Peg would often make up her own games with the ball.

  * **B** Peg took the ball right away and always kept it with her.

    C Peg loved to play the same ball game as the author's dog.

    D Peg made the author wonder whether she would like a ball.

3 In "Race to the Ball," the author is **most** interested in learning

    A if Peg can beat the dog.

    B how fast Peg can swim.

    C why he is not as fast as Peg.

  * **D** why Peg does not swim faster.

4 How does Peg play "Race to the Ball" differently than the dog does?

  * **A** Peg does not always try to win.

    B Peg has more fun than the dog.

    C Peg goes faster than the dog.

    D Peg is unable to go fast.

5 Which meaning of <u>edge</u> is used in paragraph 13?

    A the side of the knife that cuts

    B a narrow lead in a sports contest

  * **C** the line where an object or area ends

    D an extremely harsh or tense tone of voice

6 The author describes a game Peg made up herself in

    A the introduction.

    B Peg's Toy Ball.

    C Race to the Ball.

  * **D** Playing with Gulls.

7 Why are gulls kept away from dolphin pools today?

   * **A** to protect dolphins from sick gulls

     B to stop gulls from bothering dolphins

     C to make sure dolphins eat enough fish

     D to protect gulls from getting tossed in the air

8 The author organizes this passage by the

   * **A** games Peg plays.

     B events of Peg's life in sequence.

     C contrasts between dogs and dolphins.

     D order of important facts about dolphins.

Reading Item A—2013 Grade 5

A   Peg shows that she is both friendly and smart. Give at least two examples from the passage of Peg being friendly. Then give at least two examples of Peg being smart.

Reading Item A Scoring Rubric—2013 Grade 5

Score	Description
4	The response gives at least two examples from the passage of Peg being friendly and at least two examples from the passage of Peg being smart.
3	The response gives at least two examples from the passage of Peg being friendly and one example from the passage of Peg being smart. **OR** The response gives one example from the passage of Peg being friendly and at least two examples from the passage of Peg being smart.
2	The response gives at least two examples from the passage of Peg being friendly. **OR** The response gives at least two examples from the passage of Peg being smart. **OR** The response gives one example from the passage of Peg being friendly and one example from the passage of Peg being smart.
1	The response gives one example from the passage of Peg being friendly or smart. **OR** The response demonstrates minimal understanding of the question.
0	The response is totally incorrect and shows no evidence that the student understands the task. The response may be off topic or completely irrelevant.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

Soups

by Lucille Recht Penner

SOUP, SOUP, glorious soup—everyone in colonial America ate soup in huge quantities. It was hot and filling. It could be made with almost anything that happened to be available. And enough could be prepared at one time to last for a week or more.

To cook soup, a large iron kettle was hung on the back of the fireplace. In this the ingredients would simmer and bubble, often for several days, giving off the most fragrant aromas. In the opinion of some people, soup got better the more days it was cooked, a view recorded in the famous rhyme:

Pease[1] porridge hot,
Pease porridge cold,
Pease porridge in the pot,
Nine days old.

Some like it hot,
Some like it cold,
Some like it in the pot,
Nine days old.

What was soup made from? In summer, colonists used wild plants from the forests and fresh vegetables from their gardens, including onions, celery, cabbage, carrots, squash, and of course peas. For additional flavor they would often add fresh mint and sage and other savory herbs. In winter, when fresh vegetables were not to be had, dried ones were used, especially peas, pumpkin, corn, and beans. At any time of year the root cellar was likely to provide such soup fixings as turnips, potatoes, carrots, and beets.

Not only vegetables were used. Meat, fish, seafood and even nuts often went into soup. The Pennsylvania Dutch (who were really German) topped their thickest soups with delicious dumplings. Eventually some soups became so thick that they stopped being soups at all, and became stews. The New York Dutch (who really were Dutch) made delicious stews by thickening their meat-and-vegetable soups with cornmeal.

[1] colonial spelling of "peas"

5   Colonial travelers, who needed a long time to cover even short distances, actually filled their pockets with soup before they left on a trip. This Portable Soup, as it was called, was prepared in the usual way and could contain practically any ingredients. The only difference was that no water was added to replace that which boiled away during cooking, so that the soup became thicker and thicker as it shrank in volume. Then it was poured into dishes, given several days to dry out completely, and at last cut into little cakes that were kept in a tin. When the traveler felt hungry he simply boiled some water, dropped in a cake of Portable Soup, sometimes added a handful of dried corn, and in no time had a delicious meal.

In the days of the earliest settlers, soup was often dinner. The most important thing in that time of hardship was that there be plenty of it—not that it be fancy. But during the later colonial period, when many parts of the colonies had become prosperous, soup was often the elegant first course of a three or four course dinner. New England clam chowder is one of the most famous colonial soups—a rich mixture of clams, potatoes, and cream. A more unusual soup was Peanut Soup, a specialty of the South, made by crushing peanuts and simmering them with cream.

7   As a final <u>crowning touch</u>, the colonists sometimes added dried marigold petals, which gave their soup both an added flavor and a beautiful color.

PEASE PORRIDGE

Today the word *porridge* means a breakfast dish of oatmeal and milk, but in former times it meant a thick soup. On New England farms, Pease Porridge with a string in it was sometimes left outside on a cold winter night. In the morning, the farmer brought the chunk of frozen soup along when he went out to work in the fields, and hung it in a tree by the string. When he was ready for lunch, he just built a fire and heated it.

> *2 cups dried split peas*
> *2 1/2 quarts cold water*
> *2 teaspoons salt*
> *2 stalks celery*
> *2 medium onions*
> *2 teaspoons dried mint or 4 teaspoons chopped, fresh mint leaves*

Rinse the peas in cold water. Put them in a six-quart pot with a tightly-fitting lid. Pour 2 1/2 quarts of cold water over the peas. Cover the pot and let them soak overnight.

In the morning, add the salt to the peas and water. Bring to a boil. Turn the heat to low. Cover, and simmer the peas until tender, about 3 hours.

Chop the celery. Peel and chop the onions. If you're using fresh mint, chop or snip it with a scissors. Add the celery, onions and mint to the soup. Simmer for another 30 minutes.

8 servings.

9   The main purpose of this passage is to

   A   persuade readers to eat more soup.

   B   teach readers how to prepare soup.

   C   compare soups of the past and present.

 * **D**   explain the role of soup in colonial times.

10   What did the word *porridge* mean in colonial America?

   A   a thin stew

 * **B**   a thick soup

   C   seafood and nuts

   D   oatmeal and milk

11   Which question can be correctly answered by reading paragraph 5?

   A   Why did colonial travelers prefer soup to bread?

   B   What distances did colonial travelers cover?

 * **C**   How was Portable Soup prepared?

   D   Who first invented Peanut Soup?

12   Which was **most likely** to appear in a New England soup?

   A   squash

   B   peanuts

 * **C**   potatoes

   D   cornmeal

13   In paragraph 7, the author uses the phrase crowning touch to mean

   A   hitting someone on the head.

   B   awarding something first place.

   C   placing a crown on someone's head.

 * **D**   bringing something to a wonderful end.

14   In the recipe for pease porridge, italics are used to

 * **A**   separate the ingredients needed from other information.

   B   point out information you do not have to read.

   C   explain the steps in making pease porridge.

   D   call attention to the most important facts.

15 According to the passage, which could **best** be called instant soup?

   A Peanut Soup
* **B** Portable Soup
   C Pease Porridge
   D Clam Chowder

16 Which of these ideas from the passage is an opinion?

   A Soups were made in a large iron kettle on the back of the fireplace.
   B Some soups contained mint and sage and other savory herbs.
   C Meat, fish, seafood, and even nuts often went into soup.
* **D** Soup got better the more days it was cooked.

Reading Item B—2013 Grade 5

B   Different colonial groups made different kinds of soups. Using details from the passage, describe four different kinds of soups made by various groups.

Reading Item B Scoring Rubric—2013 Grade 5

Score	Description
4	The response describes at least four different kinds of soup made by four different groups of colonial people using details from the passage.
3	The response describes three different kinds of soup made by three different groups of colonial people using details from the passage.
2	The response describes two different kinds of soup made by two different groups of colonial people using details from the passage.
1	The response describes one kind of soup made by one group of colonial people using details from the passage. **OR** The response demonstrates minimal understanding of the question.
0	The response is totally incorrect and shows no evidence that the student understands the task. The response may be off topic or completely irrelevant.
B	Blank—No response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

1 Read the poem.

**Winter Poem
by Nancy**

Many prints upon the snow,
From whom or what, I do not know.
Disappearing from my eye,
I wonder, wonder; did it _____?
Looking up into a tree,
What was looking back at _____?

Which words **best** complete the rhyme scheme of the poem?

A go/him
B see/her
* **C** fly/me
D jump/you

2 **We planned a trip to the park; _____, we stayed home because it was raining.**

Which transition word **best** completes the sentence?

A also
* **B** however
C therefore
D for instance

3 Which of the following is an interrogative sentence?

A What a surprise!
* **B** Do you like nachos?
C Popcorn is an excellent snack.
D Imagine the best birthday party ever.

4 Which of the following sentences uses commas **correctly**?

* **A** Andrea and I went to the store, and my brother stayed home.
B Andrea and I went to the store, and, my brother stayed home.
C Andrea and I went to the store and, my brother stayed home.
D Andrea and I went to the store and my brother, stayed home.

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WRITING PROMPT

Your teacher has asked you to write about a time you did something important.

Before you begin to write, think about times you have done important things in school, at home, in a job, or in an activity after school. What did you do? Why was it important?

Now write about a time you did something important. Be sure to tell what happened and give enough detail so that your teacher will understand why it was important.

WRITER'S CHECKLIST

1. Look at the ideas in your response.

_____ Have you focused on one main idea?

_____ Have you used enough detail to explain yourself?

_____ Have you put your thoughts in order?

_____ Can others understand what you are saying?

2. Think about what you want others to know and feel after reading your paper.

_____ Will others understand how you think or feel about an idea?

_____ Will others feel angry, sad, happy, surprised, or some other way about your response? (Hint: Make your reader feel like you do about your paper's subject.)

_____ Do you have sentences of different lengths? (Hint: Be sure you have a variety of sentence lengths.)

_____ Are your sentences alike? (Hint: Use different kinds of sentences.)

3. Look at the words you have used.

_____ Have you described things, places and people the way they are? (Hint: Use enough detail.)

_____ Are you the same person all the way through your paper? (Hint: Check your verbs and pronouns.)

_____ Have you used the right words in the right places?

4. Look at your handwriting.

_____ Can others read your handwriting with no trouble?

Domain Scoring Rubric

Content (C)
The Content domain includes the focusing, structuring, and elaborating that a writer does to construct an effective message for a reader. It is the creation of a product, the building of a composition intended to be read. The writer crafts his/her message for the reader by focusing on a central idea, providing elaboration of the central idea, and delivering the central idea and its elaboration in an organized text. Features are:

- Central idea
- Elaboration
- Unity
- Organization

Style (S)
The Style domain comprises those features that show the writer purposefully shaping and controlling language to affect readers. This domain focuses on the vividness, specificity, and rhythm of the piece and the writer's attitude and presence. Features are:

- Selected vocabulary
- Sentence variety
- Tone
- Voice
- Selected information

Sentence Formation (F)
The Sentence Formation domain reflects the writer's ability to form competent, appropriately mature sentences to express his/her thoughts. Features are:

- Completeness
- Standard word order
- Absence of fused sentences
- Expansion through standard coordination and modifiers
- Embedding through standard subordination and modifiers

Usage (U)
The Usage domain comprises the writer's use of word-level features that cause written language to be acceptable and effective for standard discourse. Features are:

- Standard inflections
- Agreement
- Word meaning
- Conventions

Mechanics (M)
The Mechanics domain includes the system of symbols and cueing devices a writer uses to help readers make meaning. Features are:

- Capitalization
- Punctuation
- Formatting
- Spelling

Scoring Scale
Each domain is scored independently using the following scale.

4 = The writer demonstrates **consistent**, though not necessarily perfect, control* of almost all of the domain's features.

3 = The writer demonstrates **reasonable**, but not consistent, control* of most of the domain's features, indicating some weakness in the domain.

2 = The writer demonstrates **inconsistent** control* of several of the domain's features, indicating significant weakness in the domain.

1 = The writer demonstrates **little** or **no** control* of most of the domain's features.

*Control: The ability to use a given feature of written language effectively at the appropriate grade level. A response receives a higher score to the extent that it demonstrates control of the features in each domain.

The application of the scale, using actual student writing, is done with the assistance of a committee of Arkansas teachers, language arts supervisors, and representatives of the Arkansas Department of Education.

Nonscoreable and Blank Papers
Nonscoreable papers include student responses that are off-topic, illegible, incoherent, written in a language other than English, or too brief to assess. Nonscoreable papers will receive a score of "0." Blank papers indicate no response was written and will be reported as NA (no attempt), which translates into a score of "0."

The Arkansas Science Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1— Nature of Science (N)	1. Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.	2. Identify and define components of *experimental design* used to produce *empirical evidence*: • *hypothesis* • replication • sample size • appropriate use of control • use of standardized *variables* 3. Calculate mean, median, mode, and range from scientific data using *SI units*. 4. Interpret scientific data using • data tables/charts • bar graphs • circle graphs • line graphs • *stem and leaf plots* • Venn diagrams 5. Communicate results and conclusions from scientific inquiry. 8. Explain the role of observation in the development of a theory.
2— Life Science (L)	2. Living Systems: Characteristics, Structure, and Function: Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.	4. Model and identify the parts of animal *cells* and plant *cells*: • *cell* wall • *cell* membrane • *nucleus* • cytoplasm • chloroplast 5. Compare and contrast plant and animal *cells*. 6. Conduct investigations to separate plant pigments from the *cell*. 7. Identify the role of chlorophyll in the process of photosynthesis. 8. Explain and illustrate photosynthesis.
	4. Populations and Ecosystems: Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.	4. Evaluate food webs under conditions of stress: • overgrazing • overpopulation • natural disaster • introduction of non-native *species* • human impact/urban development 5. Examine the role of *limiting factors* on the *carrying capacity* of an *ecosystem*: • food • space • water • shelter 9. Conduct investigations demonstrating the role of the *carbon dioxide-oxygen cycle* in *ecosystems*. 12. Conduct investigations in which plants are encouraged to thrive. 14. Categorize *organisms* by the function they serve in *ecosystems* and food webs: • *predator/prey* • *parasitism* • *producer/consumer/decomposer* • *scavenger* • *herbivore/carnivore/omnivore* 17. Describe and illustrate various symbiotic relationships: • *parasitism* • *mutualism* • *commensalism* 18. Investigate careers, scientists, and historical breakthroughs related to *populations* and *ecosystems*.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet.

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3— Physical Science (P)	5. Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology.	1. Identify the relationship of *atoms* to all *matter*. 2. Conduct *scientific investigations* on *physical properties* of objects. 5. Identify characteristics and common examples of physical changes. 7. Demonstrate the effect of changes in the *physical properties* of *matter*. 9. Conduct investigations demonstrating expansion and contraction.

	6. Motion and Forces: Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.	1. Classify *simple machines*.
		2. Conduct investigations using
		  • levers (e.g., toothbrush)
		  • pulleys
		  • inclined planes-ramps, wedges, and screws
		  • wheels and axles
		5. Classify real world examples as *potential energy* or *kinetic energy* as applied to motion.

	7. Energy and Transfer of Energy: Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.	1. Summarize how light can interact with *matter* through *absorption, refraction,* and *reflection*. 3. Conduct investigations demonstrating how an object can be seen. 4. Design and conduct investigations of transparent, *translucent*, and *opaque* as applied to light.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet.

The Arkansas Science Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
4— Earth and Space Science (E)	8. Earth Systems: Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology.	3. Identify characteristics of minerals. 5. Identify the following minerals: • halite (salt) • feldspar • sulfur • quartz • diamonds • gypsum • calcite • talc • hematite (iron) • precious *metals* (gold, silver) 7. Identify characteristics of *sedimentary*, *igneous*, and *metamorphic* rocks. 8. Compare and contrast by investigation characteristics of the three basic types of rocks: • *sedimentary* • *igneous* • *metamorphic* 10. Investigate careers, scientists, and historical breakthroughs related to minerals and rocks. 13. Describe and illustrate the rock cycle.
	10. Objects in the Universe: Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.	1. Compare the physical characteristics of the sun to other stars: • size • color • brightness 2. Demonstrate the order of planets and other space objects in our *solar system*. 3. Compare the properties of planets in our *solar system*: • size • shape • *density* • *atmosphere* • distance from the sun • orbital path • moons • surface • composition 4. Distinguish between *mass* and *weight*. 5. Compare the human body's *mass* to *weight* on Earth, the moon, and other planets in our *solar system*.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet.

Released Items for Science*

Item	Strand	Content Standard	Student Learning Expectation
1	L	2	4
2	N	1	8
3	L	4	17
4	L	4	14
5	P	7	1
6	E	8	7
7	P	6	5
8	L	2	8
9	P	6	1
10	E	8	5
11	E	10	5
12	N	1	4
13	E	10	2
14	P	5	9
15	E	10	1
16	L	2	5
17	P	5	5
A	L	4	12
B	P	7	4

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Science items.

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Non-Released Items for Science*

Strand	Content Standard	Student Learning Expectation
P	5	1
E	8	3
L	4	18
E	8	8
L	2	7
E	10	2
E	10	4
L	4	9
E	8	13
L	2	6
P	5	7
E	8	10
L	4	5
L	4	4
E	10	1
P	5	1
L	4	4
E	10	3
P	7	3
N	1	3
P	5	2
P	7	1
N	1	2
N	1	4
P	6	2
N	1	5

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Science items.

The Arkansas Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1—Number and Operations (N)	1. Number Sense: Students shall understand numbers, ways of representing numbers, relationships among numbers, and number systems.	1. Use models and visual representations to develop the concepts of the following: Fractions: • parts of unit wholes • parts of a collection • locations on number lines • locations on ruler (*benchmark fractions*) • divisions of whole numbers *Ratios:* • part-to-part (2 boys to 3 girls) • part-to-whole (2 boys to 5 people) *Percents:* • part-to-100 2. Develop understanding of decimal *place value* using models. 4. Round and compare decimals to a given *place value* (*whole number*, tenths, hundredths).
	2. Properties of Number Operations: Students shall understand meanings of operations and how they relate to one another.	2. Identify *commutative* and *associative properties*. 3. Identify the *distributive property* by using physical models to solve computation and real world problems. 5. Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals.
	3. Numerical Operations and Estimation: Students shall compute fluently and make reasonable estimates.	1. Develop and use a variety of *algorithms* with *computational fluency* to perform *whole number* operations using addition and subtraction (up to five-*digit* numbers), multiplication (up to three-*digit* x two-*digit*), division (up to two-digit divisor), interpreting remainders, including real world problems. 3. Solve, with and without appropriate *technology*, two-step problems using a variety of methods and tools (i.e. objects, mental computation, paper and pencil).
2—Algebra (A)	4. Patterns, Relations, and Functions: Students shall recognize, describe, and develop patterns, relations, and functions.	1. Solve problems by finding the next term or missing term in a *pattern* or *function* table using real world situations. 2. Interpret and write a rule for a one operation *function table*. Ex. adding 3
	5. Algebraic Representations: Students shall represent and analyze mathematical situations and structures using algebraic symbols.	1. Model and solve simple *equations* by informal methods using manipulatives and appropriate *technology*. 2. Write *expressions* containing one *variable* (a letter representing an unknown quantity) using rules for addition and subtraction. 3. Select, write and evaluate *algebraic expressions* with one *variable* by substitution. Ex. Evaluate x+4 if x=7
	6. Algebraic Models: Students shall develop and apply mathematical models to represent and understand quantitative relationships.	1. Draw conclusions and make predictions, with and without appropriate *technology*, from models, tables and *line graphs*.
	7. Analysis of Change: Students shall analyze change in various contexts.	1. Model and describe quantities that change using real world situations. Ex. age and height

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The Arkansas Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3—Geometry (G)	8. Geometric Properties: Students shall analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	1. Identify and model regular and *irregular polygons* including decagon. 2. Identify and draw *congruent*, *adjacent*, *obtuse*, *acute*, *right* and *straight* angles (Label parts of an angle: *vertex*, *rays*, *interior* and *exterior*). 3. Model and identify circle, *radius*, *diameter*, *center*, *circumference* and *chord*. 4. Model and identify the properties of *congruent* figures.
	9. Transformation of Shapes: Students shall apply transformations and the use of symmetry to analyze mathematical situations.	1. Predict and describe the results of *translation (slide)*, *reflection (flip)*, *rotation (turn)*, showing that the transformed shape remains unchanged.
	10. Coordinate Geometry: Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.	1. Use geometric vocabulary (horizontal/x-axis, vertical/y-axis, *ordered pairs*) to describe the location and plot points in *Quadrant I*.
	11. Visualization and Geometric Models: Students shall use visualization, spatial reasoning, and geometric modeling.	1. Using grid paper, draw and identify *two-dimensional patterns (nets)* for *cubes*.
4—Measurement (M)	12. Physical Attributes: Students shall use attributes of measurement to describe and compare mathematical and real-world objects.	1. Identify and select appropriate units and tools to measure. Ex. angles with degrees, distance with feet 2. Make conversions within the customary measurement system in real world problems. Ex. hours to minutes, feet to inches, quarts to gallons, etc. 3. Establish through experience benchmark prefixes of milli-, centi-, and kilo-. 4. Understand when to use linear units to describe *perimeter*, square units to describe *area* or *surface area*, and cubic units to describe *volume*, in real world situations.
	13. Systems of Measurement: Students shall identify and use units, systems, and processes of measurement.	1. Solve real world problems involving one *elapsed time*, counting forward (calendar and clock). 3. Draw and measure distance to the nearest cm and ¼ inch accurately.
5—Data Analysis and Probability (D)	14. Data Representation: Students shall formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.	1. Develop appropriate questions for surveys. 3. Construct and interpret *frequency tables*, charts, *line plots*, *stem-and-leaf plots* and *bar graphs*.
	15. Data Analysis: Students shall select and use appropriate statistical methods to analyze data.	1. Interpret graphs such as *line graphs*, *double bar graphs*, and *circle graphs*. 2. Determine, with and without appropriate *technology*, the *range, mean, median* and *mode* (*whole number* data sets) and explain what each indicates about the set of data.
	17. Probability: Students shall understand and apply basic concepts of probability.	1. Identify and predict the *probability* of events within a simple experiment.

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Released Items for Mathematics*

Item	Strand	Content Standard	Student Learning Expectation
1	D	15	2
2	M	13	3
3	D	14	1
4	A	7	1
5	N	1	4
6	M	12	3
7	A	5	3
8	N	2	5
9	M	12	2
10	A	5	2
11	D	17	1
12	G	11	1
13	D	15	1
14	D	14	1
15	G	8	4
16	G	9	1
17	M	13	1
18	A	6	1
19	M	12	4
20	A	4	1
A	A	5	3
B	D	14	3
C	G	8	4

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Mathematics items.

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Non-Released Items for Mathematics*

Strand	Content Standard	Student Learning Expectation
A	4	2
G	8	3
G	8	4
M	13	3
N	2	3
G	8	1
A	7	1
G	10	1
A	4	2
A	5	1
G	8	2
M	12	2
N	3	3
N	3	1
N	1	1
D	14	3
M	12	1
D	15	2
N	2	2
N	1	2
N	3	1
N	3	3

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Mathematics items.

The Arkansas English Language Arts Curriculum Framework—Reading Strand*

Content Standards	Student Learning Expectations
9. Comprehension: Students shall apply a variety of strategies to read and comprehend printed material.	4. Generate questions relevant to text and topics. 6. Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text. 7. Make inferences supported by a character's thoughts, words and actions, or the narrator's description. 8. Analyze literary elements of character, plot, and setting. 10. Distinguish among facts and inferences supported by evidence and opinions in text. 11. Use such comprehension strategies as establishing purpose, inferring, and summarizing, to determine essential information. 12. Identify main ideas and supporting evidence in short reading passages. 13. Use the *text features* to locate and recall information, with emphasis on fonts/effects and illustrations/photographs. 14. Use knowledge of text structure(s) to enhance understanding with emphasis on sequence and description. 16. Scan materials to locate specific information. 19. Summarize information including main idea and significant supporting details.
10. Variety of Text: Students shall read, examine, and respond to a wide range of texts for a variety of purposes.	6. Skim materials to locate specific information. 8. Locate information to support opinions, predictions, and conclusions. 9. Use knowledge of text structure to locate information and aid comprehension.
11. Vocabulary, Word Study, and Fluency: Students shall acquire and apply skills in vocabulary development and word analysis to be able to read fluently.	5. Use context to determine meaning of multiple meaning words. 8. Identify figurative language such as idioms, similes and metaphors. 10. Use context clues to select appropriate dictionary definition.

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Released Items for Reading*

Item	Strand	Content Standard	Student Learning Expectation
1	R	9	6
2	R	9	11
3	R	9	11
4	R	10	8
5	R	11	5
6	R	10	9
7	R	10	6
8	R	9	14
A	R	9	12
9	R	9	11
10	R	10	6
11	R	9	4
12	R	9	12
13	R	11	8
14	R	9	13
15	R	9	6
16	R	9	10
B	R	9	19

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the English Language Arts items.

Non-Released Items for Reading*

Strand	Content Standard	Student Learning Expectation
R	9	11
R	9	8
R	9	16
R	11	8
R	9	7
R	11	10
R	9	11
R	9	19
R	9	8

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the English Language Arts items.

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The Arkansas English Language Arts Curriculum Framework—Writing Strand*

Content Standards	Student Learning Expectations

4. Process: Students shall employ a wide range of strategies as they write, using the writing process appropriately.	11. Edit individually or in groups for appropriate grade-level conventions, within the following features:
	• *Sentence formation*
	  • Completeness
	  • Absence of fused sentences
	  • Expansion through standard coordination and modifiers
	  • *Embedding* through standard subordination and modifiers
	  • Standard word order
	• *Usage*
	  • Standard inflections
	  • Agreement
	  • Word meaning
	  • Conventions
	• *Mechanics*
	  • Capitalization
	  • Punctuation
	  • Formatting
	  • Spelling

5. Purpose, Topics, Forms, and Audiences: Students shall demonstrate competency in writing for a variety of purposes, topics, and audiences employing a wide range of forms.	4. Write poems using a variety of techniques/devices, with emphasis on writing patterned and rhymed poetry.
6. Conventions: Students shall apply knowledge of Standard English conventions in written work.	2. Use different *kinds of sentences*: • Declarative • Interrogative • Imperative • Exclamatory 11. Apply conventional rules of punctuation in writing with emphasis on: • End marks • Quotation marks • Comma in a series • Comma in compound sentences • Comma in complex sentence • Comma in direct address
7. Craftsmanship: Students shall develop personal style and voice as they approach the craftsmanship of writing.	3. Use transition words.

* The Content Standards and Student Learning Expectations listed are those that specifically relate to the released and non-released test items in this booklet.

Released Items for Writing*

Item	Strand	Content Standard	Student Learning Expectation
1	W	5	4
2	W	7	3
3	W	6	2
4	W	6	11

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Writing items.

Non-Released Items for Writing*

Strand	Content Standard	Student Learning Expectation
W	4	11
W	4	11
W	4	11
W	4	11

* Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Writing items.

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